

CLAIMS

1. A content providing server that executes a content transmission process to a client, characterized by comprising:
 - 5 a tuner that executes a data reception process;
 - a data transmission/reception section that executes a communication process between the server and the client for received content by said tuner and control information;
 - a storage section having attribute information corresponding to
10 content as content information;
 - a content management section that executes a process of providing said content information to the client; and
 - a content distribution control section that executes live streaming distribution control to the client of the received content via said tuner,
 - 15 wherein said storage section is characterized by being configured to store a channel list identifier as identification information about a channel list containing at least a plurality of channels of received channels by said tuner, as content information corresponding to tuner-received content, and
 - 20 wherein said content distribution control section is characterized by being configured to set a plurality of tuner-received content corresponding to the plurality of channels described in said channel list as a single unit of controlled content, to execute control over content for distribution corresponding to the plurality of channels described in said
25 channel list on the basis of a control request corresponding to the channel list identifier received from the client.
2. The content providing server as described in claim 1, characterized in that:
 - 30 said channel list identifier is a channel list URL (Uniform Resource Locators);

said storage section is configured to store said channel list URL as attribute information corresponding to said tuner-received content; and
said content distribution control section is configured to execute distribution control over the content on the plurality of channels received
5 by said tuner specified on the basis of said channel list URL according to the control request from the client.

3. The content providing server as described in claim 1, characterized in that:
10 said channel list identifier is a channel list URL (Uniform Resource Locators);

a connection for distribution of the tuner-received content between the server and the client is an HTTP (HyperText Transport Protocol) connection set on the basis of said channel list URL; and

15 said content distribution control section is configured to execute content distribution which continuously uses the HTTP connection set on the basis of said channel list URL, before and after channel switching executed as switching of the plurality of tuner-received content corresponding to the plurality of channels described in said channel list.

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4. The content providing server as described in claim 1, characterized in that:

said content information contains content-corresponding protocol information;

25 protocol information set so as to correspond to the received content via the above-mentioned tuner contains a function ID as tuner identification information; and

said content distribution control section is configured to execute a process of setting a control instance that executes control over the
30 tuner-received content as a control instance that executes control over a tuner for control which is determined on the basis of said function ID.

5. The content providing server as described in claim 1, characterized in that:

5 said content distribution control section is configured to set a control instance that executes content distribution control over each content for distribution, to execute content-based distribution control which is based on the control instance; and

10 a tuner control instance that executes control over said tuner; received content is configured to execute control over said tuner on the basis of the control request from the client.

6. The content providing server as described in claim 1, characterized in that:

15 said content distribution control section is configured to set a control instance that executes content distribution control over each content for distribution, to execute content-based distribution control which is based on the control instance, and execute connection management which is based on a connection management table in which an instance ID as an identifier of said control instance, a connection ID as
20 a connection identifier between the server and the client, and protocol information corresponding to the content for distribution are associated with each other.

25 7. The content providing server as described in claim 1, characterized in that:

said content distribution control section is configured to set a control instance that executes content distribution control over each content for distribution, to execute content-based distribution control which is based on the control instance; and

30 said control instance is configured to have an instance ID set as an identifier, and execute the content distribution control according to a

control request from the client wherein the control instance ID is designated.

8. The content providing server as described in claim 1, characterized
5 in that:

said content distribution control section is configured to receive a control request for content for distribution which is compliant with a SOAP (Simple Object Access Control) protocol, from the client, and execute distribution control over the tuner-received content on the basis
10 of said control request.

9. The content providing server as described in claim 1, characterized in that:

said channel list is configured to be set as a list formed from the
15 plurality of channels divided according to categories.

10. The content providing server as described in claim 1, characterized in that:

said content distribution control section is characterized by being
20 configured to execute, during execution of distribution control over content on the plurality of channels received by said tuner specified on the basis of a channel list URL as the identifier of said channel list, distribution of the tuner-received content specified on the basis of the channel list URL, in response to an HTTP-GET method received as a
25 content request from another client wherein the same channel list URL is designated, through an HTTP connection which is based on said channel list URL.

11. The content providing server as described in claim 1, characterized
30 in that:

said channel list identifier is a channel URL (Uniform Resource

Locators);

a connection for distribution of the tuner-received content between the server and the client is an HTTP (HyperText Transfer Protocol) connection set on the basis of said channel list URL;

5 said content distribution control section is configured to determine whether or not matching of coded data for transmission to the client can be maintained even when the plurality of channels described in said channel list has been switched, and execute breakage of the HTTP connection set on the basis of said channel list URL where it is
10 determined that the matching cannot be maintained; and

 said content providing server is configured to further execute a process of notifying breakage information about the HTTP connection set on the basis of the channel list URL, via an event notification connection between the server and the client.

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12. The content providing server as described in claim 1, characterized in that:

 said channel list identifier is a channel list URL (Uniform Resource Locators);

20 a connection for distribution of the tuner-received content between the server and the client is an HTTP (HyperText Transport Protocol) connection set on the basis of said channel list URL; and

 said content distribution control section is configured to execute switching of a plurality of channels described in said channel list by tuner
25 control at a timing when matching of coded data for transmission to the client can be maintained.

13. An information processing apparatus that receives received content by a tuner set to a server, from the server, characterized by comprising:

30 a data transmission/reception section that executes data transmission/reception process with respect to the server that provides

tuner-received content; and

5 a control section that transmits a content transmission request which is based on a channel list identifier which is an identifier of a list containing at least a plurality of channels of received channels by said tuner, to said server, and also executes a process of transmitting distribution control request for tuner-received content wherein a control instance that executes content distribution control is designated in said server.

10 14. The information processing apparatus as described in claim 13, characterized in that:

said control section is configured to transmit a connection preparation request wherein a function ID as tuner identification information which is a piece of protocol information contained in content information received from said server is stored, to said server, to acquire an ID of a control instance that executes control over the tuner-received content, received from said server, and to execute a process of transmitting the distribution control request for the tuner-received content wherein said control instance ID is designated, as a response to said connection preparation request.

15 15. The information processing apparatus as described in claim 13, characterized in that:

said channel list identifier is a channel list URL (Uniform Resource Locators);

20 a connection for distribution of tuner-received content between the server and the client is an HTTP (HyperText Transport Protocol) connection set on the basis of said channel list URL; and

said control section is configured to execute content reception before and after switching of the plurality of channels described in said channel list by continuously using the HTTP connection set on the basis

of said channel list URL.

16. A content transmission control method for transmitting received content by a tuner set to a content providing server, to a client,

5 characterized by comprising:

a control instance setting step of setting a control instance wherein tuner-received content corresponding to a plurality of channels described in a channel list containing at least the plurality of channels of received channels by said tuner is set, as a unit of content for control;

10 a control request reception step of receiving a control request to said control instance from the client; and

a control step of executing tuner control by said control instance on the basis of said control request.

15 17. The content transmission control method as described in claim 16, characterized in that:

said channel list identifier is a channel list URL (Uniform Resource Locators); and

20 said control instance setting step comprises a step of associating said channel list URL with the control instance.

18. The content transmission control method as described in claim 16, characterized in that:

25 said channel list identifier is a channel list URL (Uniform Resource Locators);

a connection for distribution of tuner-received content between the server and the client is an HTTP (HyperText Transfer Protocol) connection set on the basis of said channel list URL; and

30 said control step is configured to execute content distribution which continuously uses the HTTP connection set on the basis of said channel list URL, before and after channel switching executed as switching of the

plurality of tuner-received content corresponding to the plurality of channels described in said channel list.

19. The content transmission control method as described in claim 16,
5 characterized in that:

said content information contains protocol information
corresponding to content;

- the protocol information set so as to correspond to the received
content via said tuner contains a function ID as tuner identification
10 information; and

said control instance setting step is configured to execute a process
of setting a control instance that executes control over the tuner-received
content as a control instance that executes control over a tuner for control
which is determined on the basis of said function ID.

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20. The content transmission control method as described in claim 16,
characterized in that:

- said content transmission control method further comprises a step
of executing connection management which is based on a connection
20 management table in which an instance ID which is an identifier of said
control instance, a connection ID which is a connection identifier between
the server and the client, and protocol information corresponding to
content for distribution are associated with each other.

- 25 21. The content transmission control method as described in claim 16,
characterized in that:

said control request reception step is a step of receiving a control
request for content for distribution compliant with a SOAP (Simple
Object Access Control) protocol, from the client.

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22. The content transmission control method as described in claim 16,

characterized in that:

said content transmission control method further comprises a step of executing, during execution of distribution control over content on the plurality of channels received by said tuner specified on the basis of a channel list URL as an identifier of said channel list, distribution of the
5 tuner-received content specified on the basis of the channel list URL, in response to an HTTP-GET method received as a content request from another client wherein the same channel list URL is designated, through an HTTP connection which is based on said channel list URL.

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23. The content transmission control method as described in claim 16, characterized in that:

said channel list identifier is a channel list URL (Uniform Resource Locators);

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a connection for distribution for tuner-received content is an HTTP (HyperText Transfer Protocol) connection set on the basis of said channel list URL; and

said content transmission control method further comprises a step of determining whether or not matching of coded data for transmission to
20 the client can be maintained even when the plurality of channels described in said channel list has been switched, and executing breakage of the HTTP connection set on the basis of said channel list URL where it is determined that the matching cannot be maintained; and a step of executing a process of notifying breakage information about the HTTP
25 connection set on the basis of the channel list URL, via an event notification connection between the server and the client.

24. The content transmission control method as described in claim 16, characterized in that:

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said channel list identifier is a channel list URL (Uniform Resource Locators);

a connection for distribution of the tuner-received content is an HTTP (HyperText Transfer Protocol) connection set on the basis of said channel list URL; and

5 said control step comprises a step of executing switching of the plurality of channels described in said channel list by tuner control at a timing when matching of coded data for transmission to the client can be maintained.

25. An information processing method for receiving received content by
10 a tuner set to a server, from the server, characterized by comprising:

 a content transmission requesting step of transmitting a content transmission request which is based on a channel list identifier, which is an identifier of a list containing at least a plurality of channels of received channels by said tuner; and

15 a control requesting step of executing a process of transmitting a distribution control request for tuner-received content wherein a control instance that executes control over content distribution in said server, is designated.

20 26. The information processing method as described in claim 25, characterized in that:

 said content transmission request step comprises a step of transmitting a connection preparation request wherein a function ID as tuner identification information which is a piece of protocol information
25 contained in content information received from said server, is stored, to said server; and

 said control request step comprises a step of executing a process of transmitting a distribution control request for tuner-received content wherein an ID of a control instance that executes control over
30 tuner-received content received from said server is designated, as a response to said connection preparation request.

27. The information processing method as described in claim 25, characterized in that:

5 said channel list identifier is a channel list URL (Uniform Resource Locators);

a connection for distribution of tuner-received content is an HTTP (HyperText Transfer Protocol) connection set on the basis of said channel list URL; and

10 said information processing method is configured to execute content reception before and after channel switching executed as switching of a plurality of channels described in said channel list, continuously using the HTTP connection set on the basis of said channel list URL.

15 28. A computer program that executes a content transmission control process for transmitting received content by a tuner set to a content providing server, to a client, characterized by comprising:

20 a control instance setting step of setting a control instance wherein tuner-received content corresponding to a plurality of channels described in a channel list containing at least the plurality of channels of received channels by said tuner, as a unit of content for control;

a control request receiving step of receiving a control request to said control instance from a client; and

25 a control step of executing tuner control by said control instance on the basis of said control request.

29. A computer program that executes an information processing process for receiving received content by a tuner set to a server, from the server, characterized by comprising:

30 a content transmission requesting step of transmitting a content transmission request which is based on a channel list identifier, which is

an identifier of a list containing at least a plurality of channels of received channels by said tuner; and

- 5 a control requesting step of executing a process of transmitting a distribution control request for tuner-received content wherein a control instance that executes control over content distribution in said server, is designated.